

REMARKS

Reconsideration in view of the foregoing amendments and the following remarks, and entry of this paper is respectfully requested. Moreover, the applicants have reviewed the Final Office Action of August 1, 2001, and submit that this paper is responsive to all points raised therein.

Initially, the title was objected to. The applicants have changed the title of the invention to be more descriptive thereof, in accordance with the Examiner's request. The new title, now twice amended, appears above. Accordingly, it is respectfully asserted that the objection has been cured.

Applicants submit a new Abstract with this paper. It is respectfully asserted that this new Abstract cures the objection.

Drawing Figures 5-7 have been amended to be consistent with the description in the specification. These amendments are in red ink. Approval is requested.

Claim 4 was rejected under 35 USC 112, second paragraph as indefinite.

This claim has been amended in accordance with the Examiner's suggestions from the first Office Action. Accordingly, it is respectfully asserted that claim 4 is now proper under 35 USC 112, second paragraph.

Claims 1-5 were rejected under 35 USC 102(b) as anticipated by Shurman, et al. (U.S. Patent No. 5,007,234) (Shurman).

Claim 1 recites a cutting system of blade assemblies with individually operable motors. Each motor of each blade assembly is independently operable with respect to each other motor of the other blade assemblies within the cutting system. As a result of this structure, every individually operable motor operates with complete independence from every other motor to cut the requisite vegetation.

Shurman, as discussed in the previous Amendment (in response to the First Office Action), that discussion applicable here, is directed to a lawn mower with individual motors for the respective cutting blades (cutting blade motors). These cutting blade motors are each connected to wheel driving motors. These cutting blade motors are in electrical communication with each other, to form a guidance or steering system for the lawn mower.

This guidance or steering system operates as each cutting blade motor signals other cutting blade motors based on resistance encountered in powering their respective cutting blades. This results in various levels of power consumption. The wheel driving motors will be powered in accordance with the power consumption of the cutting blade motors, with the corresponding wheels driven as per the power provided to their respective wheel driving motors. For example, low grass and bare spots, will provide a light or minimal, resistance to the cutting blade motors. Accordingly, the wheel driving motor(s) associated these cutting blade motors, will be powered, with respect to the other wheel driving motors, so that the wheels steer the lawnmower towards areas of higher grass that need cutting.

Shurman is in contrast to the claimed invention, since the disclosed motors depend on each other for proper operation of the guidance system. Based on the above, Shurman fails to show a combination including individually operable cutting blade motors that operate independently of each other with respect to the system. Accordingly, Shurman can not anticipate claim 1 under 35 USC 102(b).

Since claim 1 is not anticipated by Shurman under 35 USC 102(b), claims 2-5, dependent thereon, are also not anticipated by Shurman for the same reasons. These claims further distinguish the invention from the cited art.

Claims 6-11 were rejected under 35 USC 102(b) as anticipated by Boains, et al., (U.S. Patent No. 5,007,234) (Boains).

Claim 6, as amended, is directed to a lawnmower blade assembly including a rotatable shaft in communication with a rotatable stub and a receiver, coupled to a blade. The receiver receives and retains the stub in a releasable engagement. The shaft, stub, blade and receiver are configured to be in alignment such that the blade is balanced upon rotation.

Boains discloses a blade that is mounted by bolts through a central opening, as well as cables as a fail-safe, for keeping the blade on the assembly. These mountings are fixed and thus, there is not any releasable engagement of the blade with respect to the output shaft. This assembly also allows wearing away of the central opening, as it rubs against the bolt over time, wearing away portions of the bolt and central opening over time. This wearing away results in the blade becoming unbalanced over time, if it was ever balanced initially.

This is in contrast to the claimed invention, that provides a releasable blade that remains balanced over its lifetime, as a result of the receiver engaging the stub in a coaxial alignment. Accordingly, it is respectfully asserted that Boains fails to show, teach or suggest the structure recited in claim 6. Accordingly, claim 6 is not anticipated by Boains under 35 USC 102(b).

Since claim 6 is neither anticipated nor obvious in view of Boains, claims 7 and 8, dependent thereon, are also allowable over this cited art for the same reasons. These claims further distinguish the invention from this cited art.

Claim 9, as amended, is directed to a blade assembly including a blade and a receiver coupled thereto. The receiver includes a receiving portion and flexible members configured for moving between outward and inward positions, with respect to the receiving portion. The flexible members also include ends that if pressured, will move the flexible members outward allowing for disengagement of the blade from the stub. As a result of this structure, the blade can be placed onto and removed from the stub absent any tools, or "tools free", making changing of the blades a simple and quick operation.

Boains has been discussed above. That discussion is applicable here.

It is respectfully asserted that Boains fails to disclose any structure of flexible members for releasing any blade engagements. Rather, the Boains blade must be placed onto and removed from the assembly by a fastening and unfastening a bolt 60 into and out of an axial bore 62 of the motor shaft 28. These bolt fastening and unfastening operations almost certainly involve using tools and are time consuming operation. Accordingly, Boains fails to show, teach or suggest the claimed invention, and therefore, claim 9 is not anticipated under 35 USC 102(b) nor rendered obvious by Boains.

Since claim 9 is neither anticipated nor obvious in view of Boains, claims 10 and 11, dependent thereon, are also allowable over this cited art for the same reasons. These claims further distinguish the invention from this cited art.

Additionally, claims 10 and 11 have been amended so as to be consistent with claim 9, from which they depend.

Claims 12 and 13 have been added to round out the scope of the invention. These claims are directed to a blade that is in a releasable engagement and configured for alignment so as to be balanced upon rotation, as detailed above.

Accordingly, based on the arguments presented above, it is respectfully asserted that these claims are allowable over the art of record.

Finally, the citations of Braun, et al. (U.S. Patent No. 5,894,715), Sueshige, et al. (U.S. Patent No. 4,944,142), Wallo (U.S. Patent No. 4,232,505), Fleigle (U.S. Patent No. 4,084,680) and Duran, et al. (U.S. Patent No. 3,500,620), are noted to complete the record.

Should the Examiner have any question or comment as to the form, content or entry of this Amendment, the Examiner is requested to contact the undersigned at the telephone number below. Similarly, if there are any further issues yet to be resolved to advance the prosecution of this application to issue, the Examiner is requested to telephone the undersigned counsel.

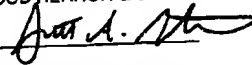
Entry of this paper and allowance of all pending claims, 1-13, is respectfully requested.

Respectfully submitted,

S. Levin, et al.,

By their Attorneys,

WOOD HERRON & EVANS

by 

Name Scott A. Stinebruner
Reg. No. 38,323

WOOD, HERRON & EVANS
2700 Carew Tower
441 Vine Street
Cincinnati, OH 45202
Tel: (513) 241-2324
Fax: (513) 421-7269

Date: 25 OCT 2001

VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE TITLE

The title has been amended as follows:

LAWMOWER CUTTING DECK AND [BLADE ASSEMBLY WITH]
RELEASEABLE [COMPONENTS] BLADE.

IN THE ABSTRACT

The abstract has been deleted and replaced as follows:

ABSTRACT

A cutting system for a lawnmower or the like includes multiple blade assemblies driven by a motor, each motor independently operable with respect to each other motor. The blade assemblies are arranged into a cutting system with a length less than that of the combined length of the blades of the blade assemblies. Blade assemblies include components that align so as to balance the blade upon rotation. These components allow for a single user to attach and disengage the blade from the motor, or portion rotated thereby, with hands alone, absent tools.

IN THE CLAIMS:

Claims 4, 6 and 9-11 have been amended and new claims 12 and 13 have been added as below. Additions are underlined (___) and deletions are bracketed ([]).

4. (Once Amended). The lawnmower of claim 3, wherein said blade assemblies include first, second and third blade assemblies, with said second blade assembly intermediate said first and third blade assemblies, said first and third blade assemblies situated along a first plane and said second blade assembly situated along a second plane, said first and second planes substantially parallel to each other.
6. (Twice Amended). A lawnmower blade assembly comprising:
a shaft in rotatable communication with a motor, said shaft in communication with a [rotatable] stub;

a blade;

a receiver, said receiver coupled to said blade and including members for receiving said stub and retaining said stub in said receiver in a releasable engagement(,);

said (motor) shaft, stub, blade and receiver are configured to be in coaxial alignment, such that said blade is balanced upon rotation.

9. (Twice Amended). A lawnmower blade assembly comprising:

a shaft in rotatable communication with a motor;

[and in communication with] a [rotatable] stub in communication with said shaft; [and]

a blade; and

a receiver coupled to [a receiver] said blade, said receiver including a receiving portion [receiver member] and at least a plurality of flexible members [in communication with said receiver member, said flexible members] configured for moving between outward and inward positions for engaging and retaining said stub in said [receiver member] receiving portion in a releasable engagement, said flexible members including ends and configured such that pressure on said ends moves said flexible members outward, allowing for at least the disengagement of said blade from said [motor] stub.

10. (Twice Amended). The blade assembly of claim 9, wherein said [motor] shaft, stub, blade and receiver are configured to be in coaxial alignment, such that said blade is balanced upon rotation.

11. (Once Amended). The blade assembly of claim 10, wherein said stub includes an outer surface and said [receiver member] receiving portion includes an inner surface, said outer and said inner surfaces correspondingly configured with respect to each other for allowing a sufficient but minimal amount of rotational play for said blade.

12. (New). A lawnmower blade comprising:

a blade body including oppositely disposed cutting portions and a platform intermediate said oppositely disposed cutting portions; and
a receiver, said receiver coupled to said platform in a substantially coaxial alignment, said receiver including flexible members for moving between outward and inward positions for receiving and retaining at least a portion of a rotatable member in communication with a motor in a releasable engagement, said receiver configured to receive and retain said rotatable member in a substantially coaxial alignment therewith, such that said lawnmower blade is balanced upon rotation.

13. (New). The lawnmower blade of claim 12, wherein said flexible members include bodies configured for spring-like behavior.

IN THE DRAWINGS

Drawing Figures 5-7 have been replaced.

ABSTRACT

62

A cutting system for a lawnmower or the like includes multiple blade assemblies driven by a motor, each motor independently operable with respect to each other motor. The blade assemblies are arranged into a cutting system with a length less than that of the combined length of the blades of the blade assemblies. Blade assemblies include components that align so as to balance the blade upon rotation. These components allow for a single user to attach and disengage the blade from the motor, or portion rotated thereby, with hands alone, absent tools.